

A1
amended

comprising at least one pair of discharge lines in fluid communication with the at least one culture container.

A2
C1

6. (Amended) A culturing device as defined in claim 1, wherein the at least one culture container comprises a plurality of culture containers, and wherein the plurality of culture containers are positioned so that a culture surface defined by the corresponding cell cultures lie in a common horizontal plane.

REMARKS

The applicants have carefully considered the Office action dated December 17, 2001, and the references it cites. By way of this Response, claims 2, 3, and 6 have been amended to comply with 35 U.S.C. §112, though no new matter has been entered and these claims have not been narrowed. In view of the following remarks, it is respectfully submitted that all pending claims are in condition for allowance. Favorable consideration is respectfully solicited.

Priority Document

Turning first to the priority claim, the applicants will submit the required certified copy of the German priority application upon allowance of this application.

Drawing Requirements

Turning to the drawing requirements, new formal drawings are being prepared as requested in the Office action, but are not yet available. The action *has not indicated* that the formal drawings are required in reply to the action. Also, MPEP §608.02(b) does not *require* such submission, but only that, when informal drawings were originally filed, "[d]rawing corrections should be made promptly before allowance of the application in order to avoid delays in issuance . . ." of a patent.

Therefore, the applicants will promptly submit the new formal drawings under separate cover as soon as available. The new formal drawings will include corrections as required in the notice of Draftsperson's drawing review form PTO-948.

Trademark Usage in the Specification

Turning to the specification, the action notes that the name MS-DOS, a well-known trademark for a computer operating system, is used in the specification. The name is used only once, at page 17, line 16, in the specification and is believed to be used properly. No amendment to the specification has been made at this time.

The action is not clear as to whether the present usage of MS-DOS is objected to in any way. The applicants request clarification of an objection, if any, to the usage. The applicants would be happy to amend the usage as needed.

Allowable Claims

Turning to the allowable claims, the applicants gratefully acknowledge that claims 16-18 are allowable over the art of record. However, these claims have not been rewritten in independent form at this time because the corresponding base and intervening claims are believed to be in condition for allowance in view of the following remarks.

Claim Objections and Claim Rejections under 35 U.S.C. §112

Turning to the claim informalities, claim 2 has been objected to as containing the multiple identifier "each" where no multiple element is recited. Claim 2 has been appropriately amended. Reconsideration and withdrawal of the objection is respectfully solicited.

Claims 3 and 6 have been rejected under §112, second paragraph, as indefinite. Claim 3 has been amended to provide proper antecedent basis reciting -- the at least one culture container--. Claim 6 has been amended to properly recited a plurality of culture containers such that a culture surface of the cell cultures in the containers lie in a common plane. Reconsideration and withdrawal of the rejections under §112, second paragraph, are respectfully solicited.

Claim Rejections - 35 U.S.C. §103

Turning now to the art rejections, claims 1-15 and 19-27 have been rejected under §103(a) as obvious over the combination of Pay, U.S. 5,710,043 (Pay); Liau, et al., GB 2,314,343 (Liau); and Wolf, et al., U.S. 5,707,869 (Wolf). The applicants respectfully traverse the rejection as being based on factual error.

A *prima facie* obviousness rejection requires that a cited references teach all of the limitations of the rejected claims. The Office action alleges that the combination of Pay, Liau, and Wolf teaches all of the limitations of the rejected claims. This assertion is factually in error. In paraphrasing the language of the claims using general terms *taken directly from the references and not the applicants' claims*, the Office action has improperly ignored certain limitations of claim 1. The cited art combination in fact fails to disclose all of the limitations of independent claim 1, and thus dependent claims 2-15 and 19-27.

Claim 1 recites a culturing device with “at least one supply mechanism for introducing . . . and for discharging the culture medium” respectively to and from the recited at least one culture container. Claim 1 further recites “at least one level sensor cooperating with the at least one culture container to sense a level of the culture medium” in the container. Claim 1 also recites that “the sensor controls the supply mechanism as a function of an output signal of the level sensor.” The signal is recited as “representing the level of the culture medium such that a submerged culture medium supply condition and a basal culture medium supply condition can both be achieved by the device.”

Pay discloses a culture vessel having a well therein into which a culture insert may be placed. The vertical position of the insert relative well in each embodiment of the Pay reference (FIGS. 2 and 3) can only be *manually adjusted*. At column 3, lines 34-45 mentions that a researcher can add or remove liquid culture medium from the vessel via a septum. The amount of liquid and, therefore, the liquid level relative to the culture thus also can only be manually adjusted. Therefore, the liquid medium level relative to the culture of the Pay reference can only be adjusted manually. Pay fails to teach or suggest *all* of the above-mentioned limitations of independent claim 1. The Office action acknowledges as much at page 5 of the action.

Wolf discloses a culturing device with one or more wells. A cell culture medium 50 can be *manually* added or removed through an access port 70 (reference col. 8, line 66 - col. 9, line 6). Also, there is no mention anywhere within the Wolf reference of control or adjustment of culture medium level, whether manual or automatic. It is apparent that the liquid medium level is intended to be held constant in Wolf, as opposed to being adjustable. Wolf, therefore, also fails to teach or suggest *all* of the above-mentioned limitations of independent claim 1. Again, the Office action acknowledges as much at the top of page 6 of the action.

Liau discloses a culture chamber 1 with vertically oriented culture cells anchored at anchorage surfaces within the chamber. A culture medium is circulated through the culture chamber via inlet and outlet ports. The liquid level in the chamber 1 in Liau is intermittently cycled between an upper level and a lower level. Only gravity and mechanical component arrangement in the Liau device accomplish the intermittent liquid level change *within the culture chamber 1* (see page 9, lines 10-13).

Too illustrate, the disclosed device in Liau has an upstream storage (supply) tank 3 and a downstream storage (return) tank 2. The only level sensor 8 is for sensing when liquid *in the return tank 2 reaches the sensor*, which then re-circulates liquid to the supply tank 3. The sensor 8 does **nothing to control a liquid medium level in the culture chamber 1, nor does the sensor control a supply mechanism to the chamber 1**. Instead, withdrawal of the liquid medium from the culture chamber to change the level from high to low is accomplished by means of a siphon tube 6 (see page 8, lines 18 to 25).

The upper level of the liquid in the chamber is determined by the height of the *siphon tube*. To alter this upper level, *the tube must be manually moved or swapped for a different height tube*. When the liquid level reaches the height of the tube 6, **all of the liquid** is siphoned off until it reaches the lower level. The lower level is determined by the fixed position of the outlet port 14. When the level falls below the port 14, no more liquid will be siphoned off. To change the desired lower level, the position of the of the port would have to be changed, or the valve V_2 would have to be closed manually to stop flow though the port 14 at a desired lower level. The valve would also have to be manually opened when the chamber is again at the upper level.

The sensor 8 only senses when the tank 3 is full such that liquid can be pumped back to storage tank 1 so that the tank one does not run out of liquid medium. The sensor 8 thus has no effect on the liquid level *in the culture chamber 1*, and further has no effect on any supply mechanism to the culture chamber.

Liau fails to disclose or suggest at least the following limitations of claim 1: "at least one level sensor cooperating with the at least one culture container *to sense a level of the culture medium*" *in the container*; "the sensor controls the supply mechanism as a function of an output signal of the level sensor;" and, the signal "representing the level of the culture medium." Wolf and Pay were deficient as to these limitations.

Independent claim 1 and dependent claims 2-15 and 19-27 are not rendered obvious by the cited art combination and should be allowed.

CONCLUSION

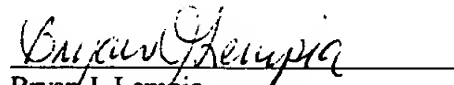
Claims 1-27 are believed to be in condition for allowance in view of the foregoing amendments and remarks. Reconsideration and withdrawal of the various objections and rejections is hereby respectfully solicited.

If the examiner is of the opinion that a telephone conference would expedite the prosecution of this case, the examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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VERSION SHOWING CHANGES MADE

In the Claims

Please cancel the withdrawn, non-elected claims 28-31 without prejudice, and amend claims 2, 3, and 6 as follows:

2. (Amended) A culturing device as defined in claim 1, wherein the cell culture insert [each] provides a horizontal culture surface within the at least one culture container.

3. (Amended) A culturing device as defined in claim 1, further comprising at least one pair of discharge lines in fluid communication with the [individual] at least one culture container[s].

6. (Amended) A culturing device as defined in claim 1, wherein the at least one culture container comprises a plurality of culture containers, and wherein the plurality of culture containers are [is] positioned so that a culture surface defined by the corresponding cell [culture lies] cultures lie in a common horizontal plane.